FIG.1

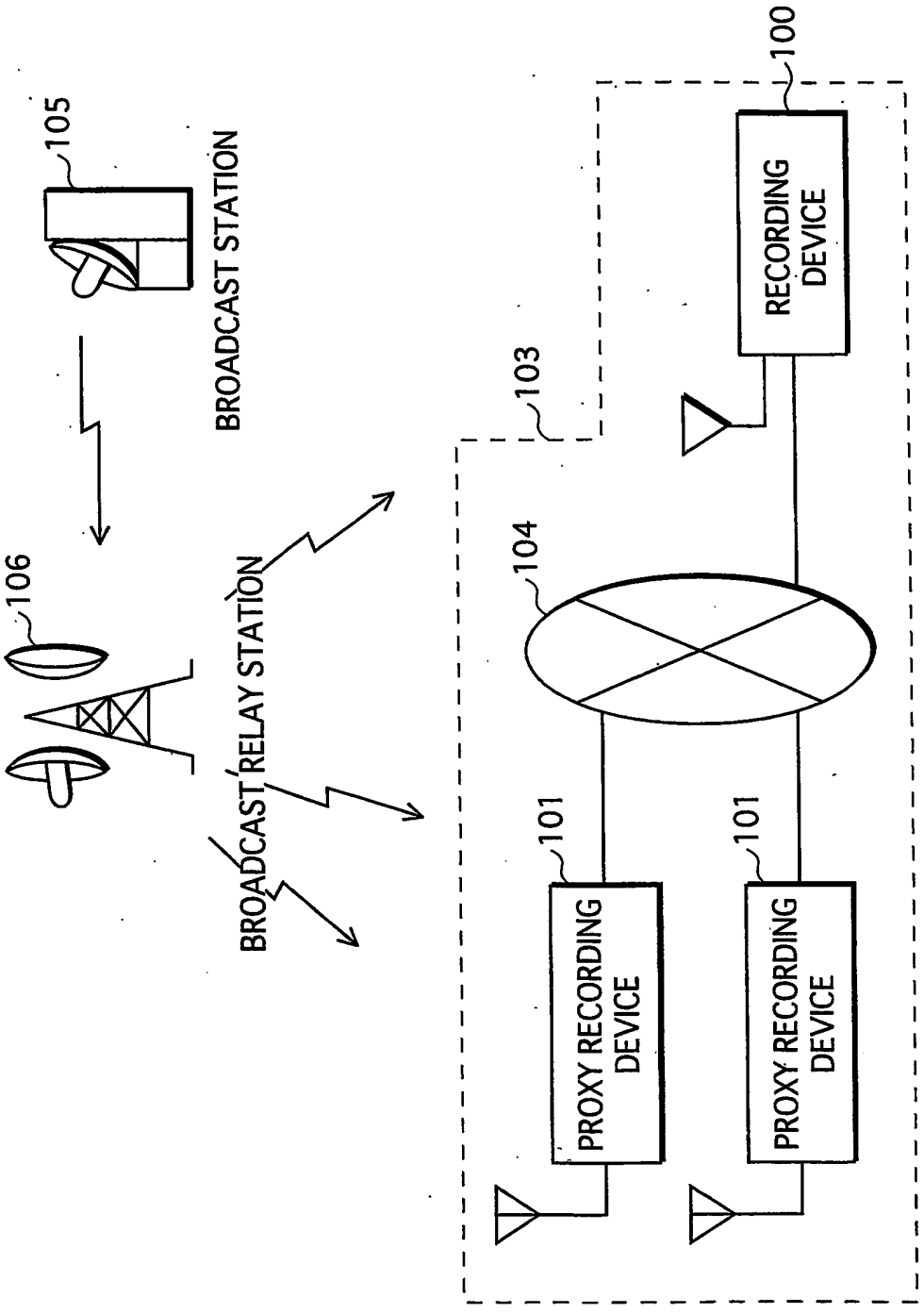

105
BROADCAST STATION
106
BROADCAST RELAY STATION
100
RECORDING DEVICE
103
104
101
PROXY RECORDING DEVICE
101
PROXY RECORDING DEVICE

FIG.2

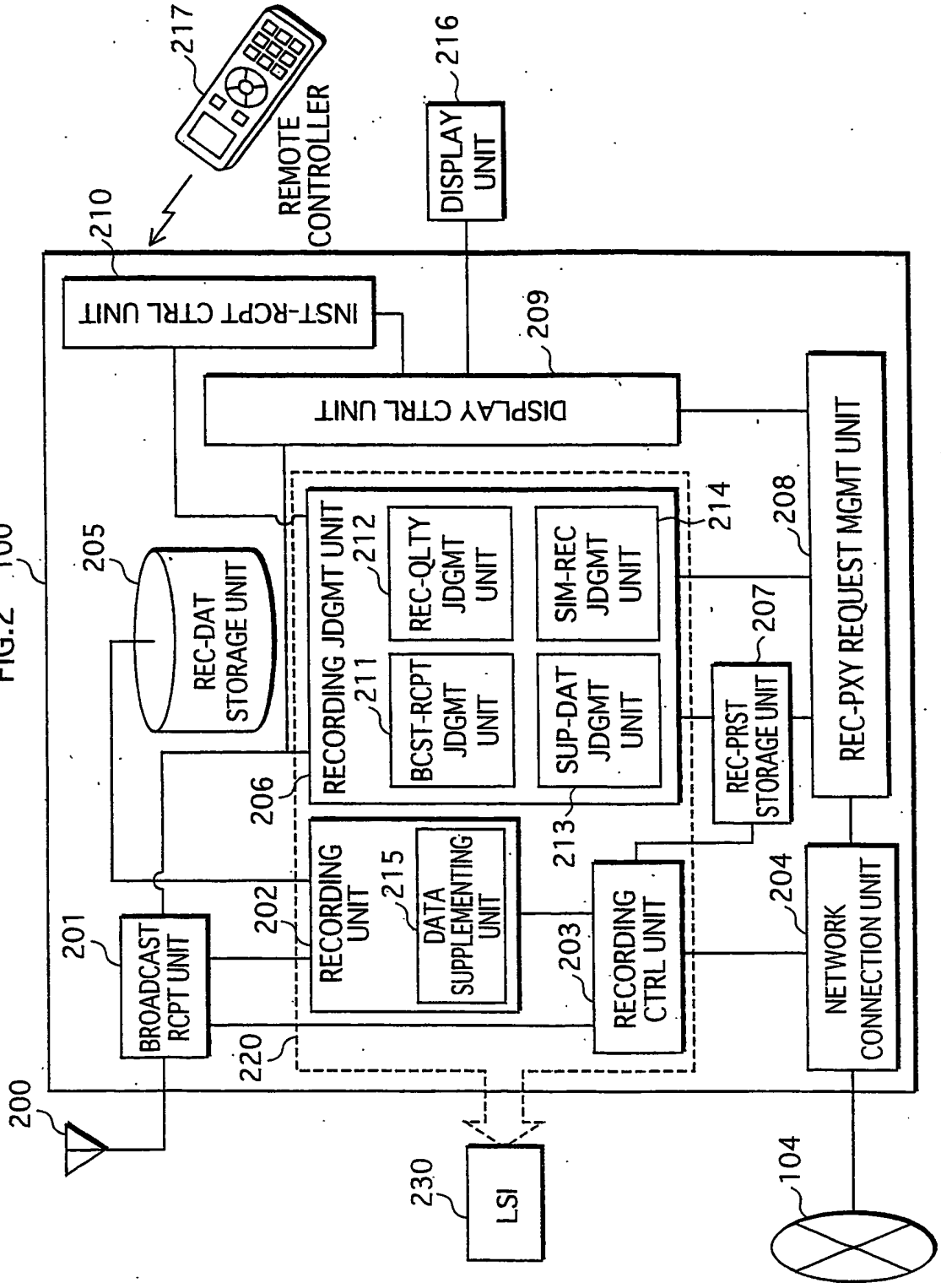

100
200
201
BROADCAST RCPT UNIT
202
RECORDING UNIT
215
DATA SUPPLEMENTING UNIT
203
RECORDING CTRL UNIT
204
NETWORK CONNECTION UNIT
104
205
REC-DAT STORAGE UNIT
206
RECORDING JDGMT UNIT
211
BCST-RCPT JDGMT UNIT
212
REC-QLTY JDGMT UNIT
213
SUP-DAT JDGMT UNIT
214
SIM-REC JDGMT UNIT
207
REC-PRST STORAGE UNIT
208
REC-PXY REQUEST MGMT UNIT
209
DISPLAY CTRL UNIT
210
INST-RCPT CTRL UNIT
216
DISPLAY UNIT
217
REMOTE CONTROLLER
220
230
LSI

FIG.3

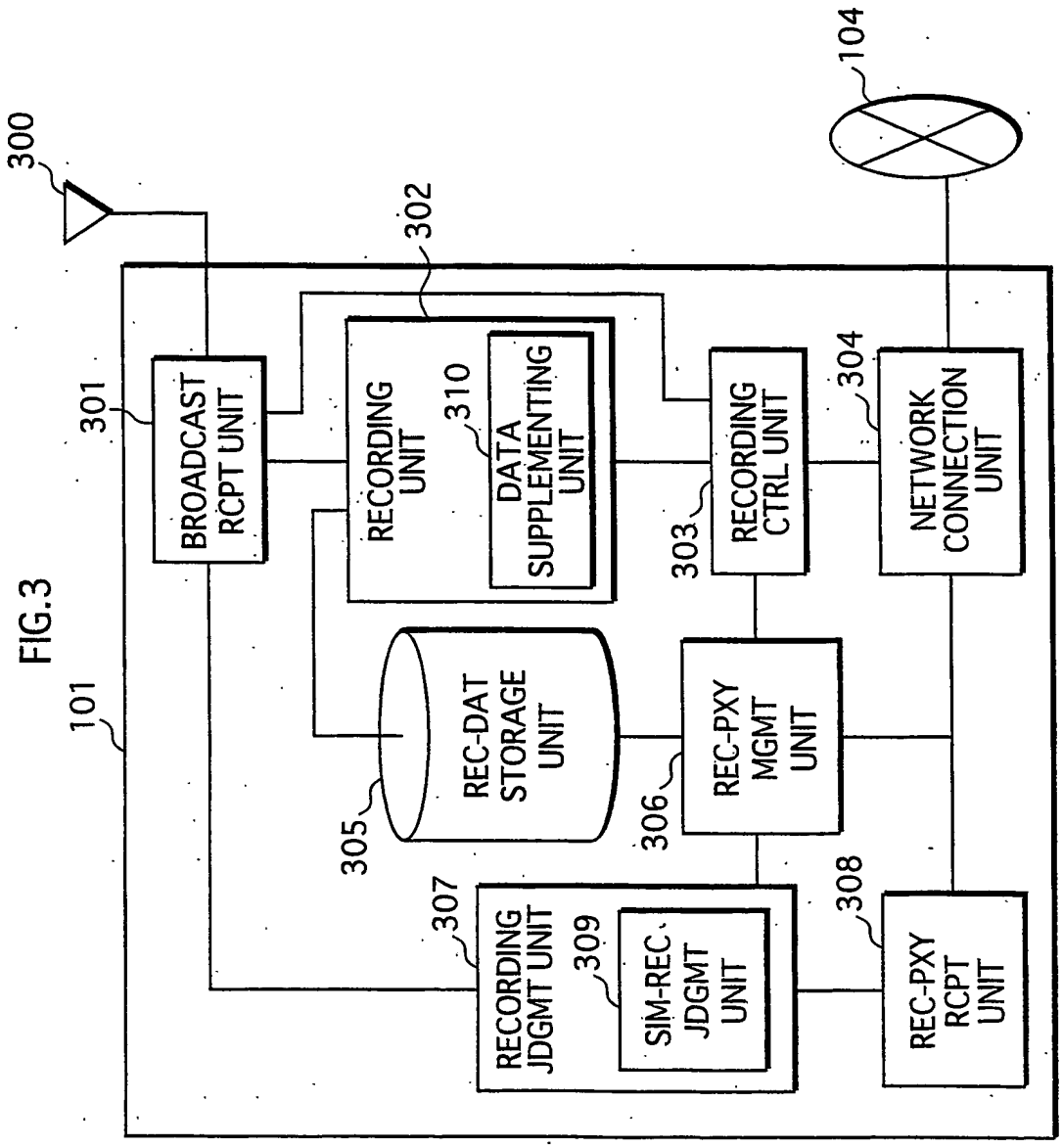

104
300
302
301
BROADCAST RCPT UNIT
RECORDING UNIT
310
DATA SUPPLEMENTING UNIT
RECORDING CTRL UNIT
303
304
NETWORK CONNECTION UNIT
101
REC-DAT STORAGE UNIT
305
REC-PXY MGMT UNIT
306
307
RECORDING JDGMT UNIT
309
SIM-REC. JDGMT UNIT
308
REC-PXY RCPT UNIT

FIG.4

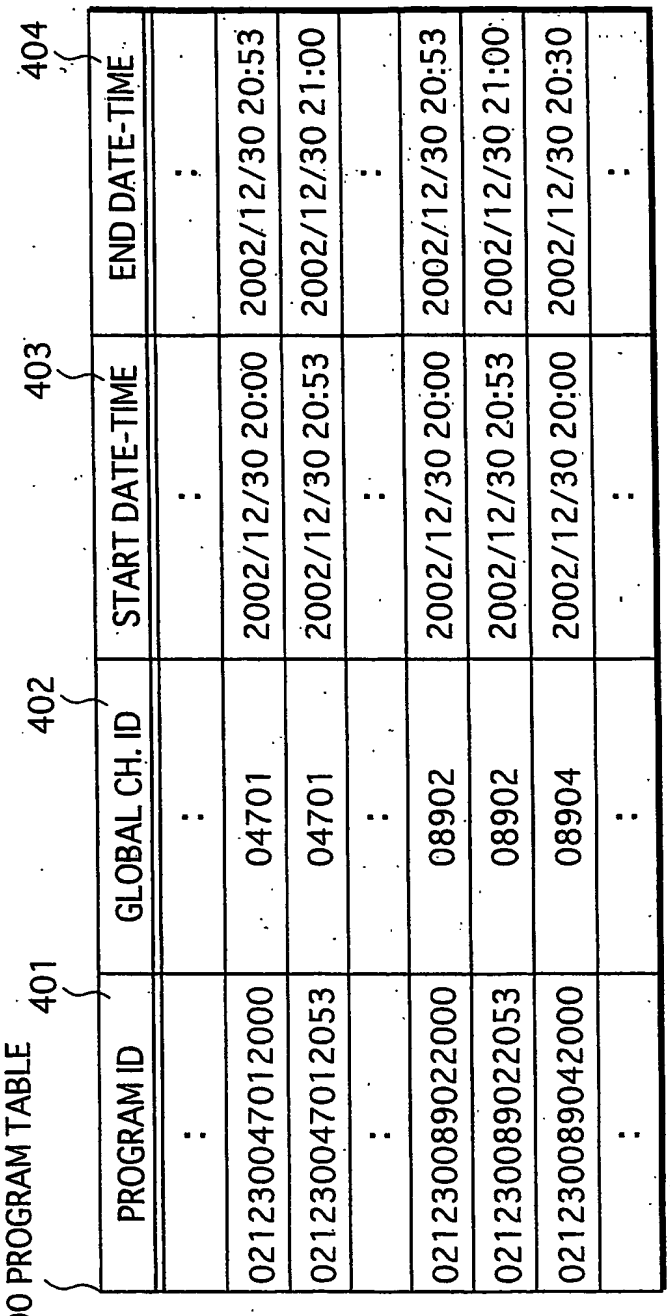

400 PROGRAM TABLE
401
402
403
404
PROGRAM ID
GLOBAL CH. ID
START DATE-TIME
END DATE-TIME
:
:
:
:
02123004701 2000
04701
2002/12/30 20:00
2002/12/30 20:53
02123004701 2053
04701
2002/12/30 20:53
2002/12/30 21:00
:
:
:
:
02123008902 2000
08902
2002/12/30 20:00
2002/12/30 20:53
02123008902 2053
08902
2002/12/30 20:53
2002/12/30 21:00
02123008904 2000
08904
2002/12/30 20:00
2002/12/30 20:30
:
:
:
:

FIG.5

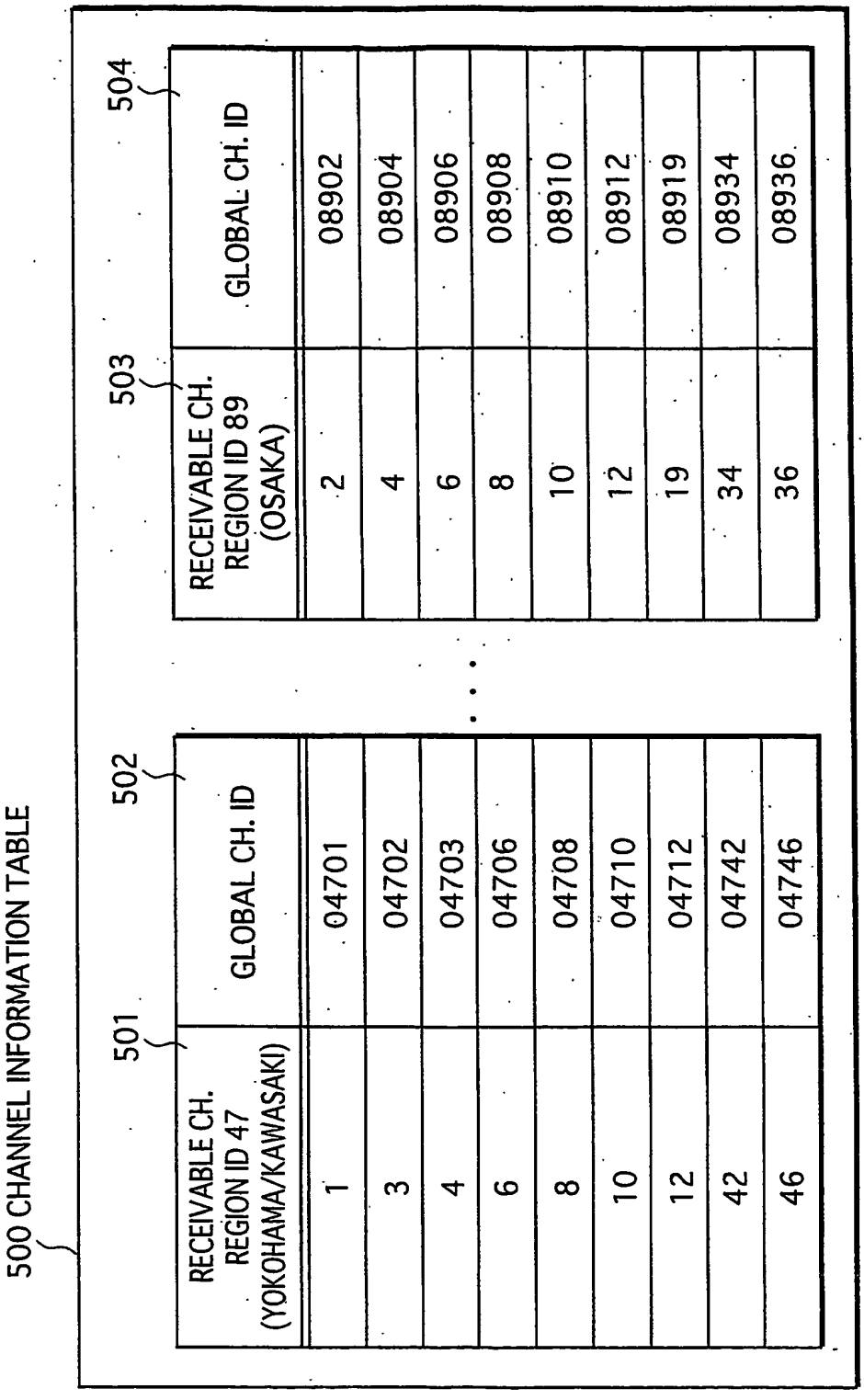

500 CHANNEL INFORMATION TABLE
501
502
503
504
RECEIVABLE CH. REGION ID 47 (YOKOHAMA/KAWASAKI)
GLOBAL CH. ID
1 04701
3 04702
4 04703
6 04706
8 04708
10 04710
12 04712
42 04742
46 04746
RECEIVABLE CH. REGION ID 89 (OSAKA)
GLOBAL CH. ID
2 08902
4 08904
6 08906
8 08908
10 08910
12 08912
19 08919
34 08934
36 08936

FIG.6

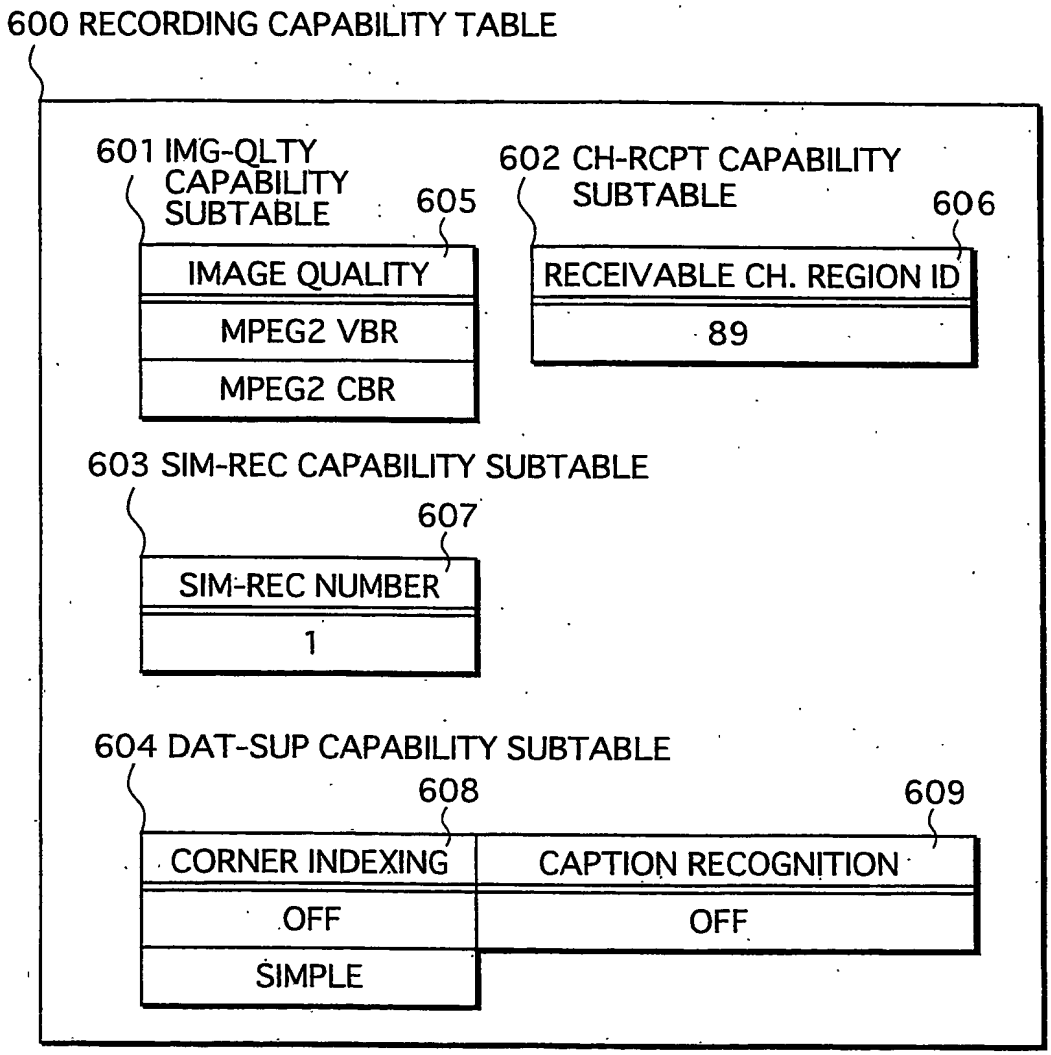

600 RECORDING CAPABILITY TABLE
601 IMG-QLTY CAPABILITY SUBTABLE
605
IMAGE QUALITY
MPEG2 VBR
MPEG2 CBR
602 CH-RCPT CAPABILITY SUBTABLE
606
RECEIVABLE CH. REGION ID
89
603 SIM-REC CAPABILITY SUBTABLE
607
SIM-REC NUMBER
1
604 DAT-SUP CAPABILITY SUBTABLE
608
CORNER INDEXING
OFF
SIMPLE
609
CAPTION RECOGNITION
OFF

FIG.7

700 CRN-INDX CLASS. MASTER TABLE

701 ID	702 CORNER INDEXING
1	OFF
2	SIMPLE
3	ADVANCED
:	:

FIG.8

800 CPT-RECOG CLASS. MASTER TABLE

801 ID	802 CAPTION RECOGNITION
1	OFF
2	SIMPLE
3	ADVANCED
:	:

FIG.9

900 IMG-QLTY CLASS. MASTER TABLE

901 ID	902 IMAGE QUALITY
1	MPEG2 VBR
2	MPEG2 CBR
3	MPEG4
4	MPEG4 AVC
5	MPEG2 VBR(HQ)
:	:

FIG.10

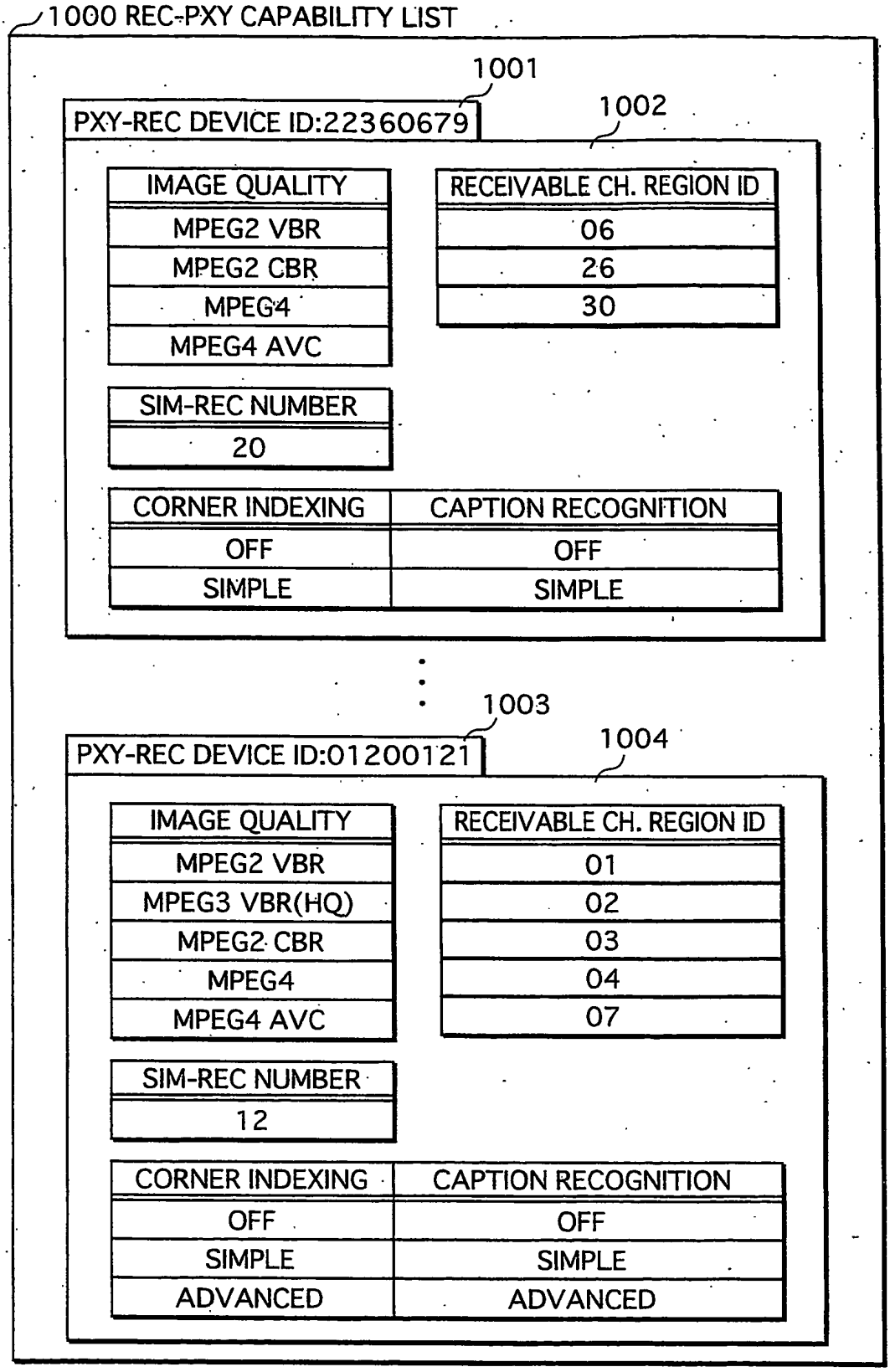

1000 REC-PXY CAPABILITY LIST
1001
PXY-REC DEVICE ID:22360679
1002
IMAGE QUALITY
MPEG2 VBR
MPEG2 CBR
MPEG4
MPEG4 AVC
RECEIVABLE CH. REGION ID
06
26
30
SIM-REC NUMBER
20
CORNER INDEXING
CAPTION RECOGNITION
OFF
OFF
SIMPLE
SIMPLE
1003
PXY-REC DEVICE ID:01200121
1004
IMAGE QUALITY
MPEG2 VBR
MPEG3 VBR(HQ)
MPEG2 CBR
MPEG4
MPEG4 AVC
RECEIVABLE CH. REGION ID
01
02
03
04
07
SIM-REC NUMBER
12
CORNER INDEXING
CAPTION RECOGNITION
OFF
OFF
SIMPLE
SIMPLE
ADVANCED
ADVANCED

FIG.11

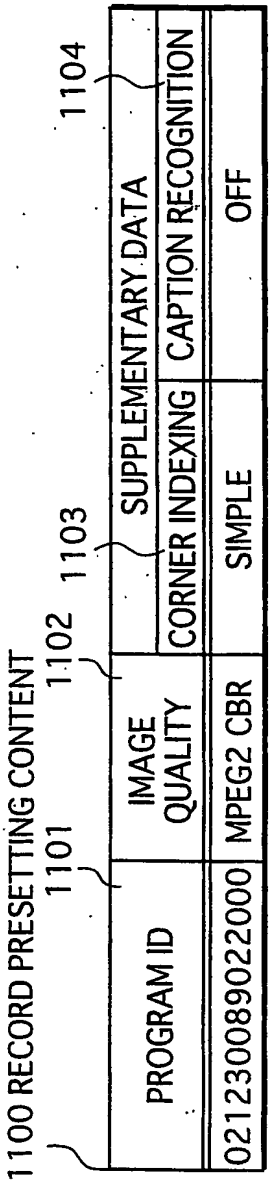

1100 RECORD PRESETTING CONTENT
1101
1102
1103
1104
PROGRAM ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
0212300890220000
MPEG2 CBR
SIMPLE
OFF

FIG.12

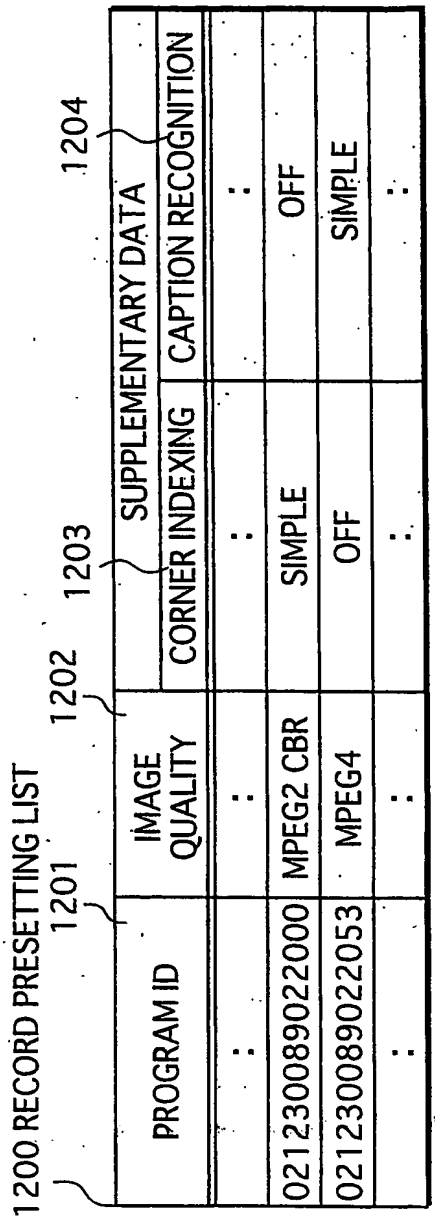

1200 RECORD PRESETTING LIST
1201
1202
1203
1204
PROGRAM ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
:
:
:
0212300890220000
MPEG2 CBR
SIMPLE
OFF
0212300890220053
MPEG4
OFF
SIMPLE
:
:
:

FIG.13

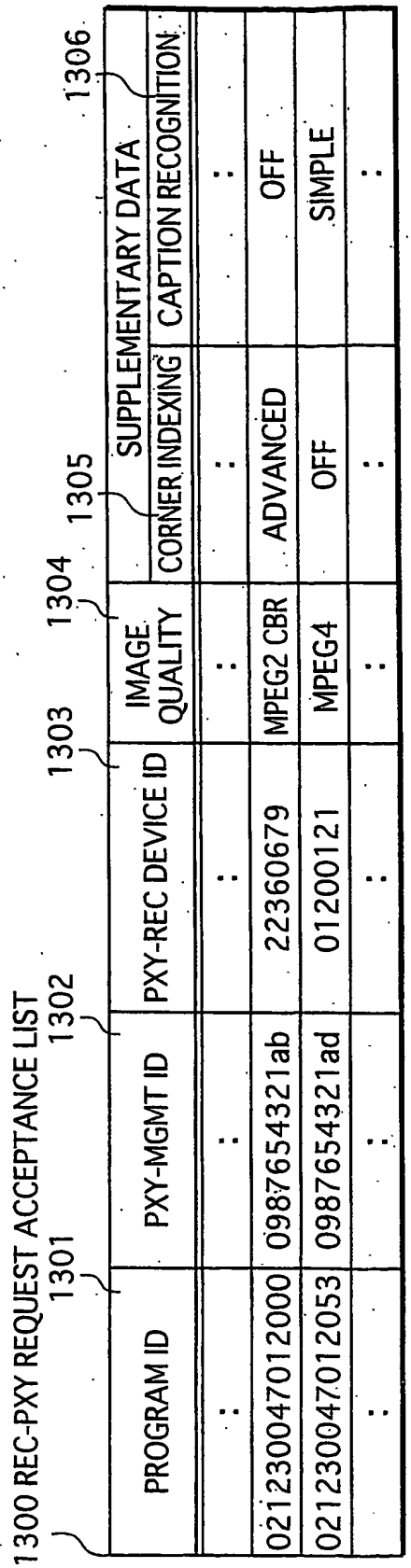

1300 REC-PXY REQUEST ACCEPTANCE LIST
1301
1302
1303
1304
1305
1306
PROGRAM ID
PXY-MGMT ID
PXY-REC DEVICE ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
02123004701200 0
0987654321ab
22360679
MPEG2 CBR
ADVANCED
OFF
02123004701205 3
0987654321ad
01200121
MPEG4
OFF
SIMPLE

FIG.14

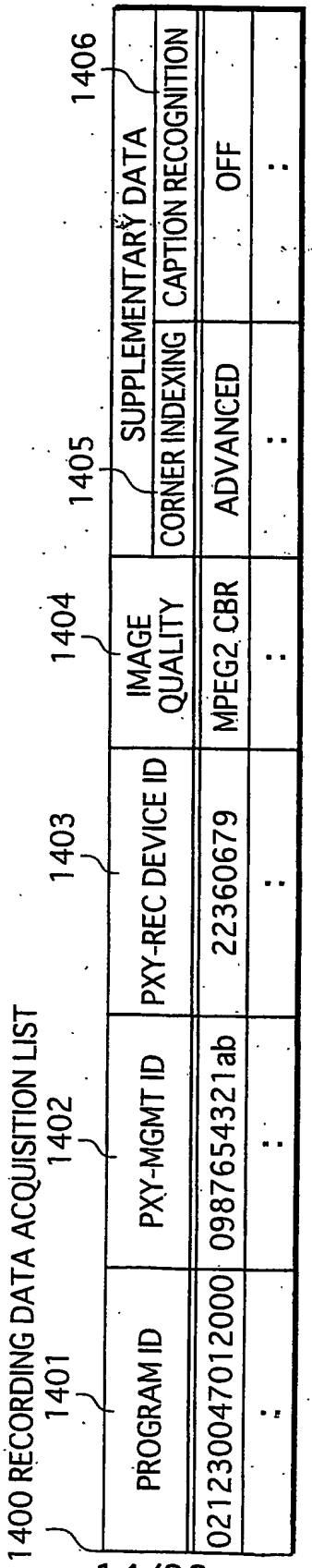

1400 RECORDING DATA ACQUISITION LIST
1401
1402
1403
1404
1405
1406
PROGRAM ID
PXY-MGMT ID
PXY-REC DEVICE ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
02123004701 2000
0987654321ab
22360679
MPEG2 CBR
ADVANCED
OFF

FIG.15

1500 RECORDING PROXY CAPABILITY TABLE

1501 IMG-QLTY CAPABILITY SUBTABLE

IMAGE QUALITY
MPEG2 VBR
MPEG2 CBR
MPEG4
MPEG4 AVC

1502 CH-RCPT CAPABILITY SUBTABLE

RECEIVABLE CH. REGION ID
06
26
30

1503 SIM-REC CAPABILITY SUBTABLE

SIM-REC NUMBER
20

1504 DAT-SUP CAPABILITY SUBTABLE

CORNER INDEXING	CAPTION RECOGNITION
OFF	OFF
SIMPLE	SIMPLE

FIG.16

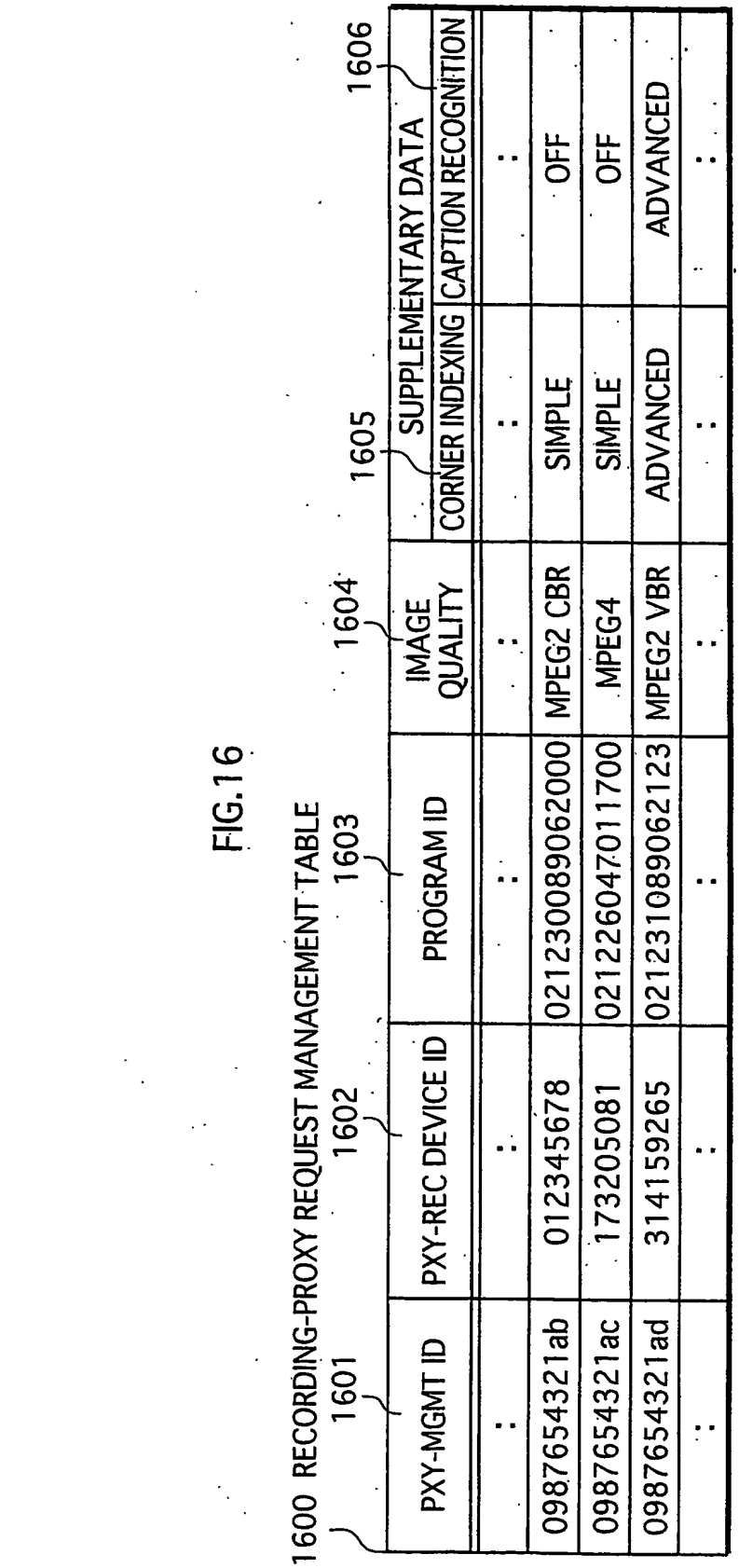

1600 RECORDING-PROXY REQUEST MANAGEMENT TABLE
1601
1602
1603
1604
1605
1606
PXY-MGMT ID
PXY-REC DEVICE ID
PROGRAM ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
0987654321ab
012345678
021230089062000
MPEG2 CBR
SIMPLE
OFF
0987654321ac
173205081
021226047011700
MPEG4
SIMPLE
OFF
0987654321ad
314159265
021231089062123
MPEG2 VBR
ADVANCED
ADVANCED

FIG.17

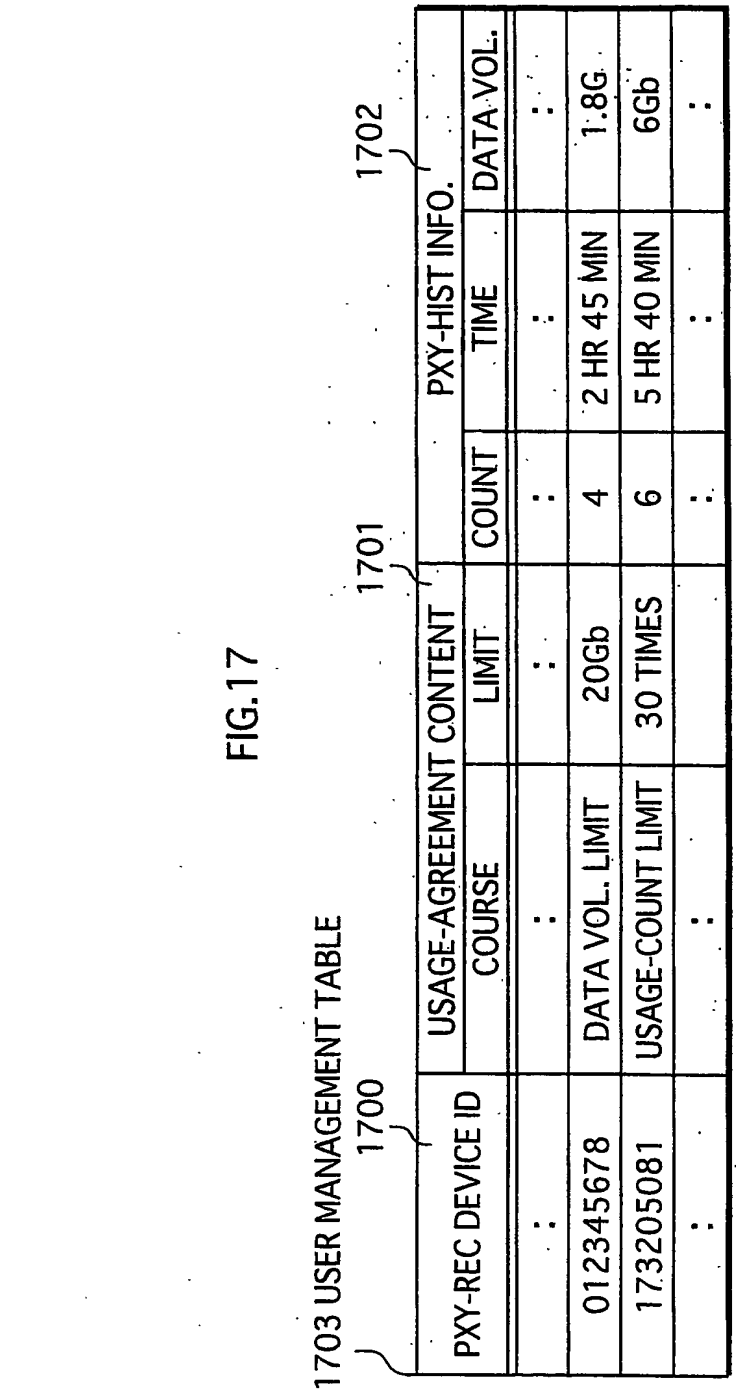

1703 USER MANAGEMENT TABLE
1700
1701
1702
PXY-REC DEVICE ID
USAGE-AGREEMENT CONTENT
COURSE
LIMIT
PXY-HIST INFO.
COUNT
TIME
DATA VOL.
012345678
DATA VOL. LIMIT
20Gb
4
2 HR 45 MIN
1.8G
173205081
USAGE-COUNT LIMIT
30 TIMES
6
5 HR 40 MIN
6Gb

FIG.18

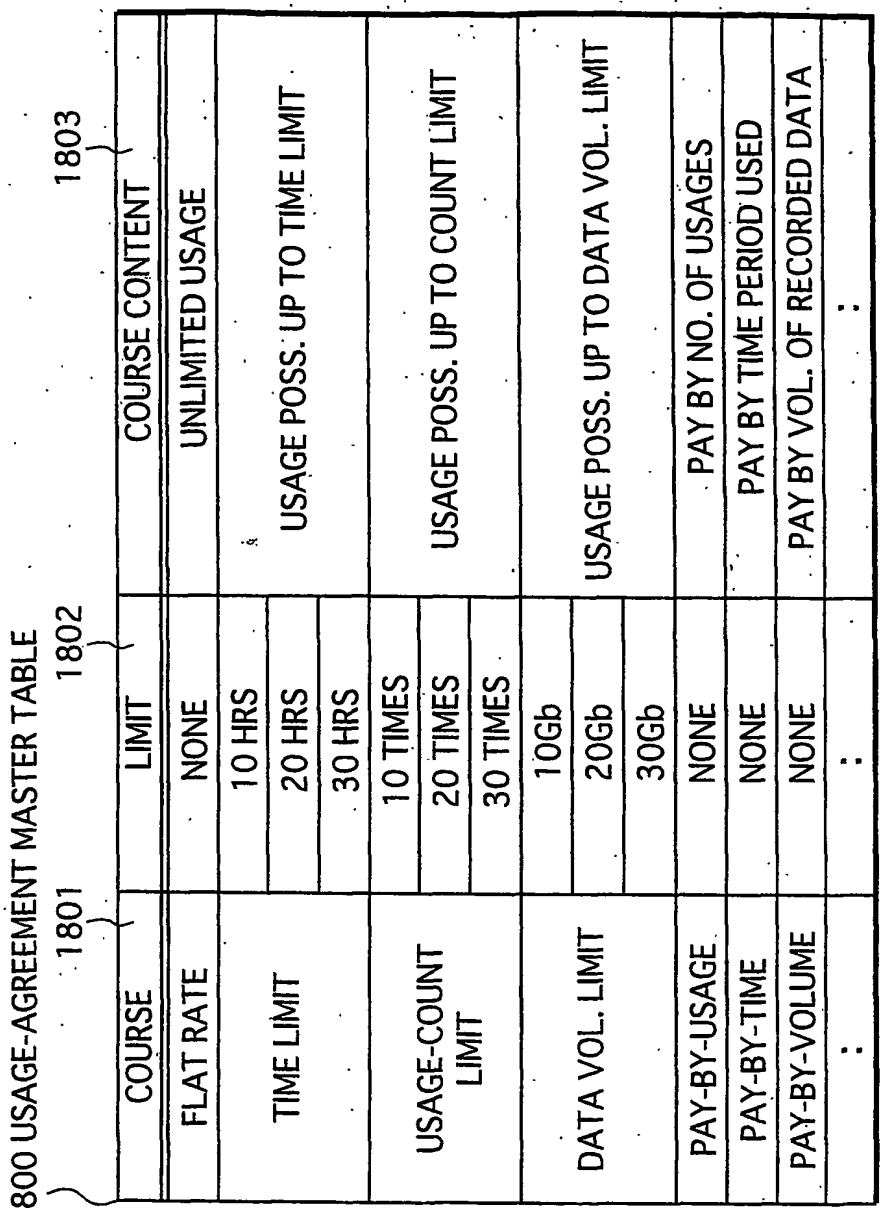

1800 USAGE-AGREEMENT MASTER TABLE
1801
1802
1803
COURSE
LIMIT
COURSE CONTENT
FLAT RATE
NONE
UNLIMITED USAGE
TIME LIMIT
10 HRS
20 HRS
30 HRS
USAGE POSS. UP TO TIME LIMIT
USAGE-COUNT LIMIT
10 TIMES
20 TIMES
30 TIMES
USAGE POSS. UP TO COUNT LIMIT
DATA VOL. LIMIT
10Gb
20Gb
30Gb
USAGE POSS. UP TO DATA VOL. LIMIT
PAY-BY-USAGE
NONE
PAY BY NO. OF USAGES
PAY-BY-TIME
NONE
PAY BY TIME PERIOD USED
PAY-BY-VOLUME
NONE
PAY BY VOL. OF RECORDED DATA
: : :

FIG.19

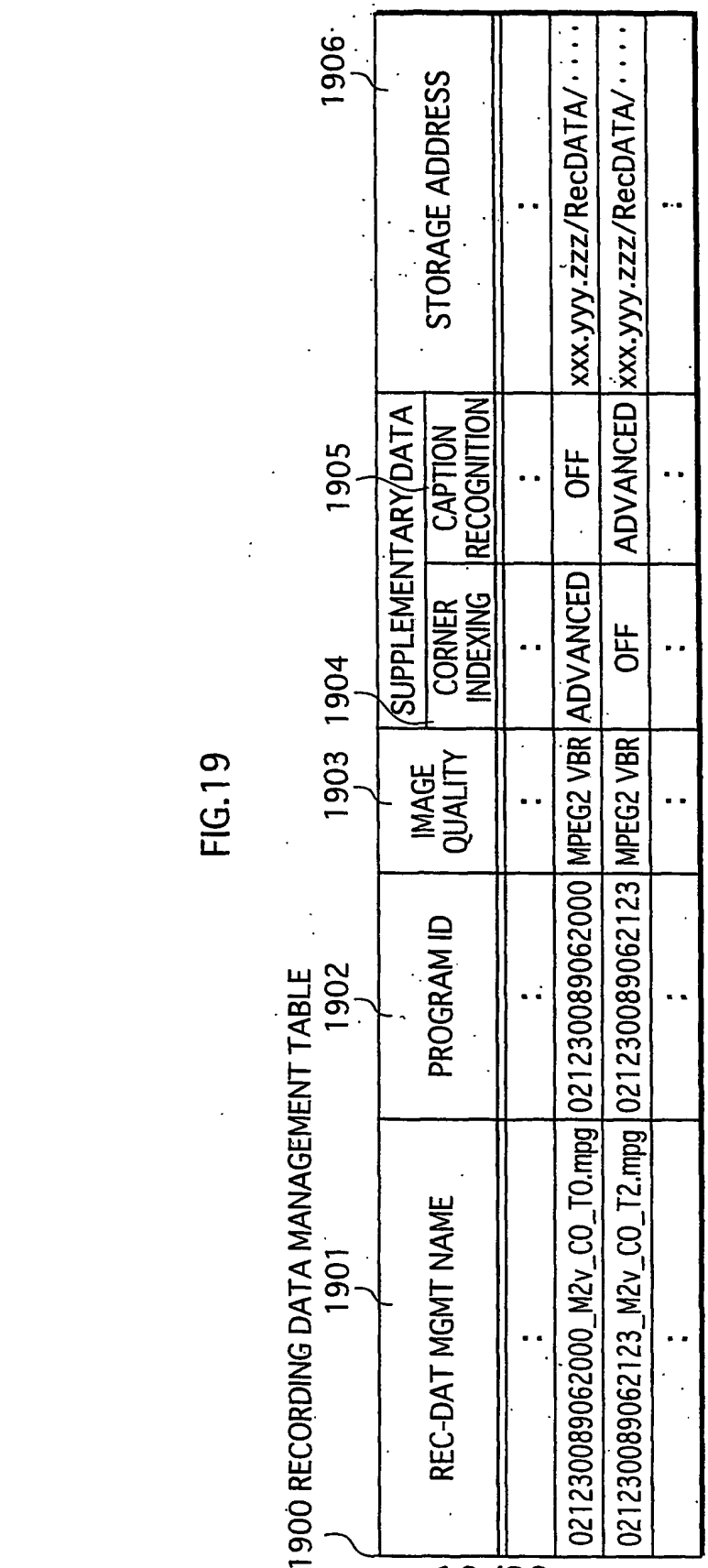
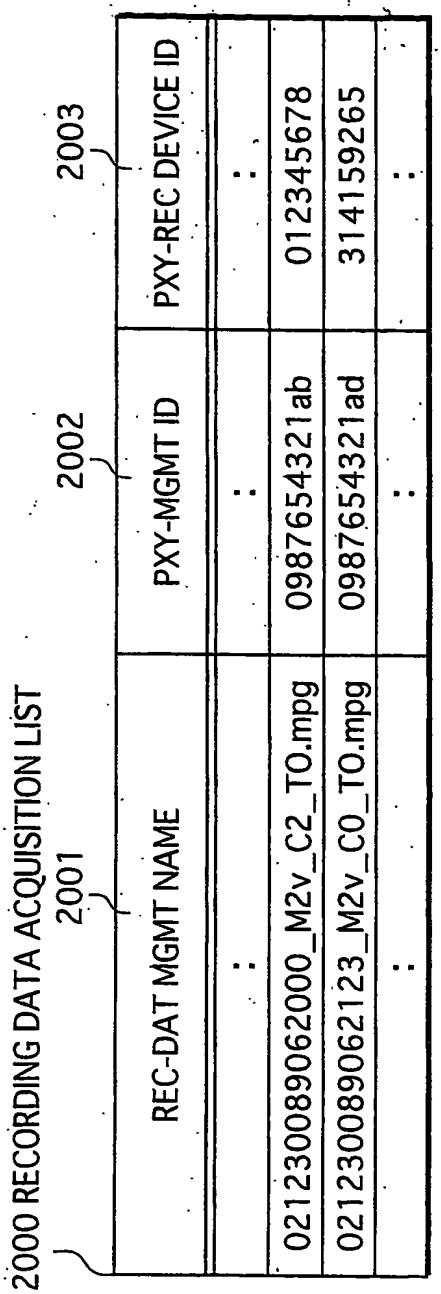

1900 RECORDING DATA MANAGEMENT TABLE
1901
1902
1903
1904
1905
1906
REC-DAT MGMT NAME
PROGRAM ID
IMAGE QUALITY
SUPPLEMENTARY DATA
CORNER INDEXING
CAPTION RECOGNITION
STORAGE ADDRESS
021230089062000_M2v_CO_T0.mpg
021230089062000
MPEG2 VBR
ADVANCED
OFF
xxx.yyy.zzz/RecDATA/....
021230089062123_M2v_CO_T2.mpg
021230089062123
MPEG2 VBR
OFF
ADVANCED
xxx.yyy.zzz/RecDATA/....

FIG.20


2000 RECORDING DATA ACQUISITION LIST
2001
2002
2003
REC-DAT MGMT NAME
PXY-MGMT ID
PXY-REC DEVICE ID
:
:
:
021230089062000_M2v_C2_TO.mpg
0987654321ab
012345678
021230089062123_M2v_C0_TO.mpg
0987654321ad
314159265
:
:
:

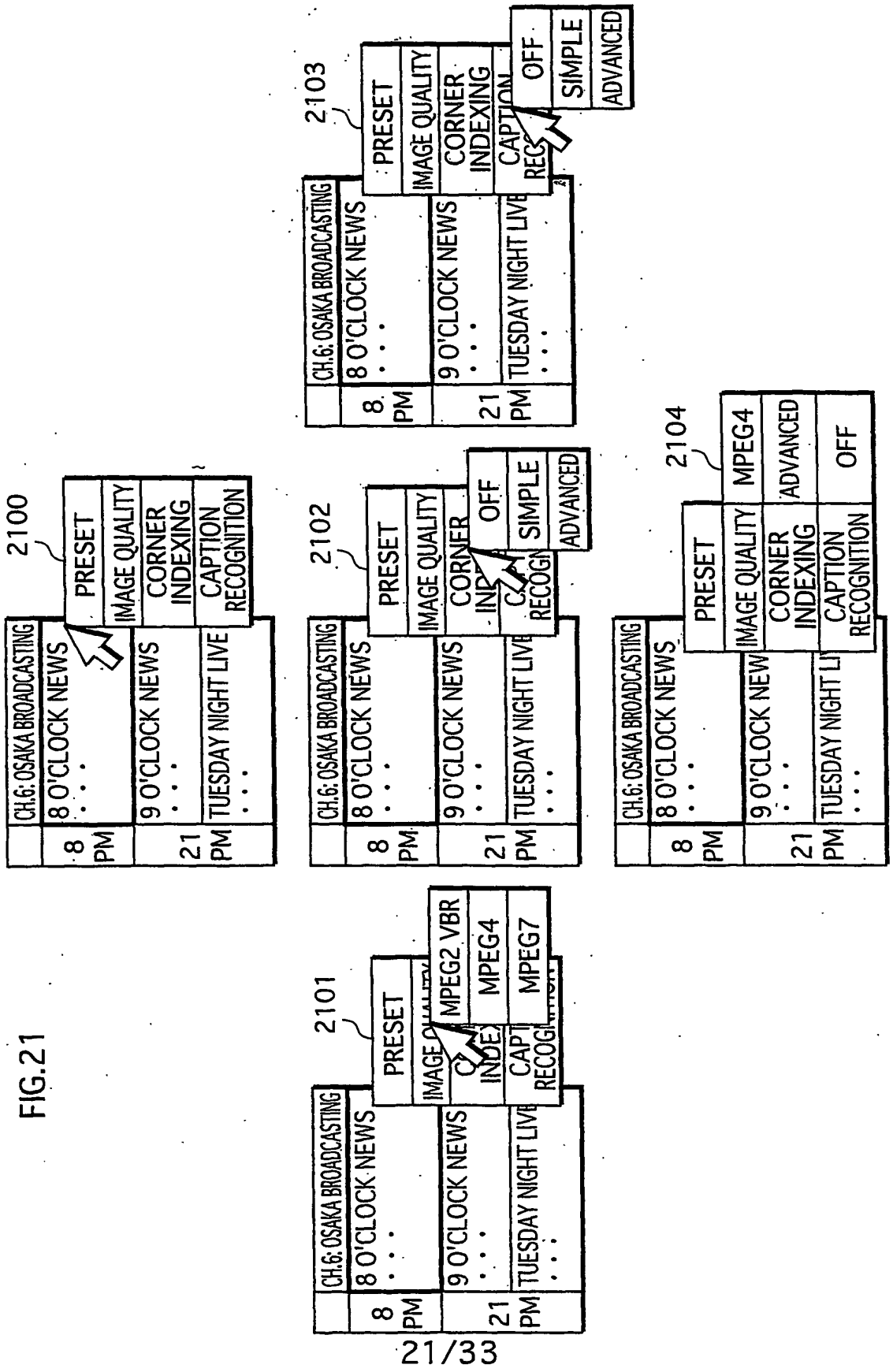

2100
PRESET
IMAGE QUALITY
CORNER INDEXING
CAPTION RECOGNITION
CH.6: OSAKA BROADCASTING
8 O'CLOCK NEWS
9 O'CLOCK NEWS
TUESDAY NIGHT LIVE
8 PM
21 PM
2101
MPEG2 VBR
MPEG4
MPEG7
2102
OFF
SIMPLE
ADVANCED
2103
2104
MPEG4
ADVANCED
OFF

FIG.21

FIG.22

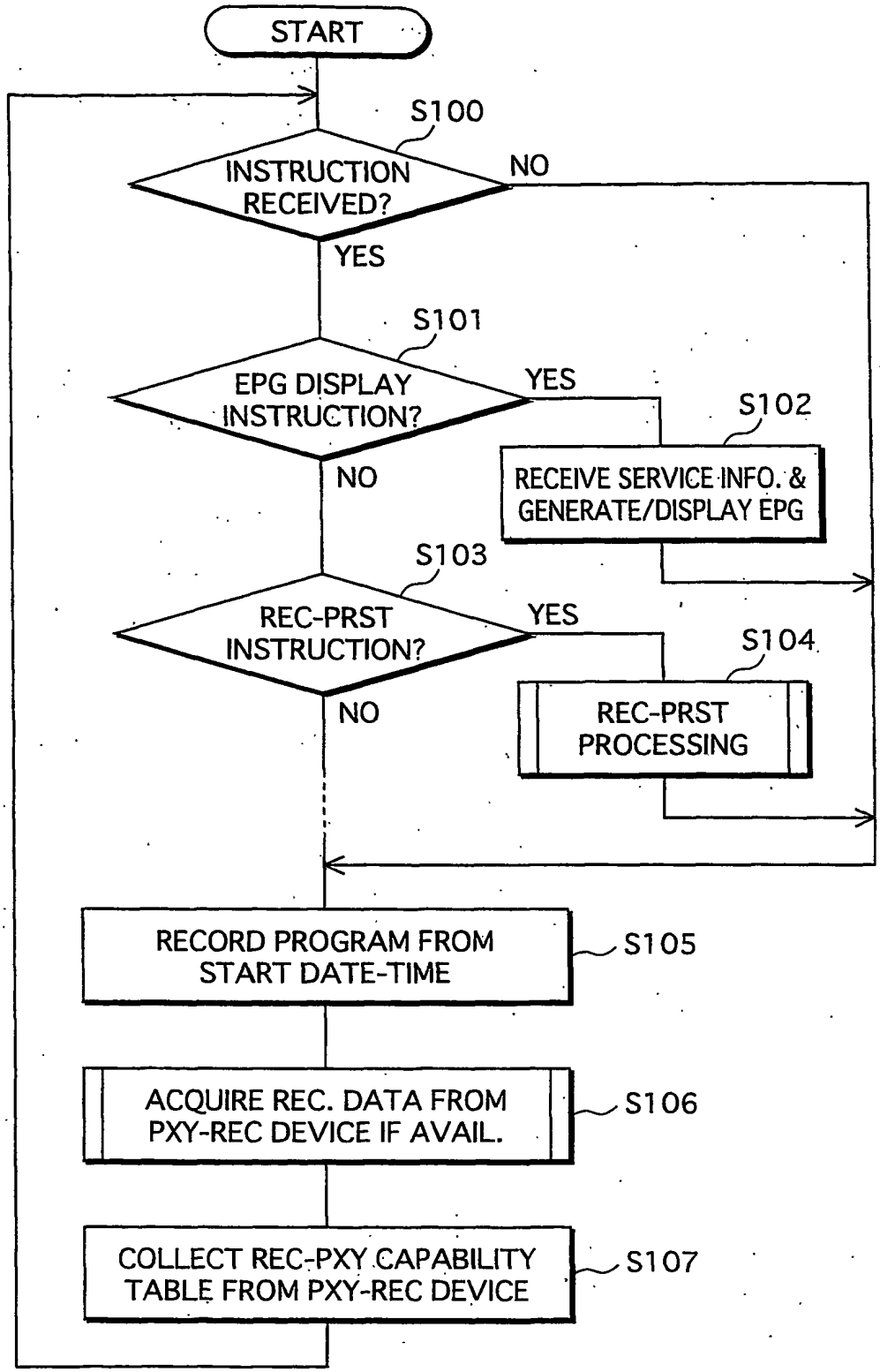

START
S100
INSTRUCTION RECEIVED?
NO
YES
S101
EPG DISPLAY INSTRUCTION?
YES
S102
RECEIVE SERVICE INFO. & GENERATE/DISPLAY EPG
NO
S103
REC-PRST INSTRUCTION?
YES
S104
REC-PRST PROCESSING
NO
RECORD PROGRAM FROM START DATE-TIME
S105
ACQUIRE REC. DATA FROM PXY-REC DEVICE IF AVAIL.
S106
COLLECT REC-PXY CAPABILITY TABLE FROM PXY-REC DEVICE
S107

FIG.23

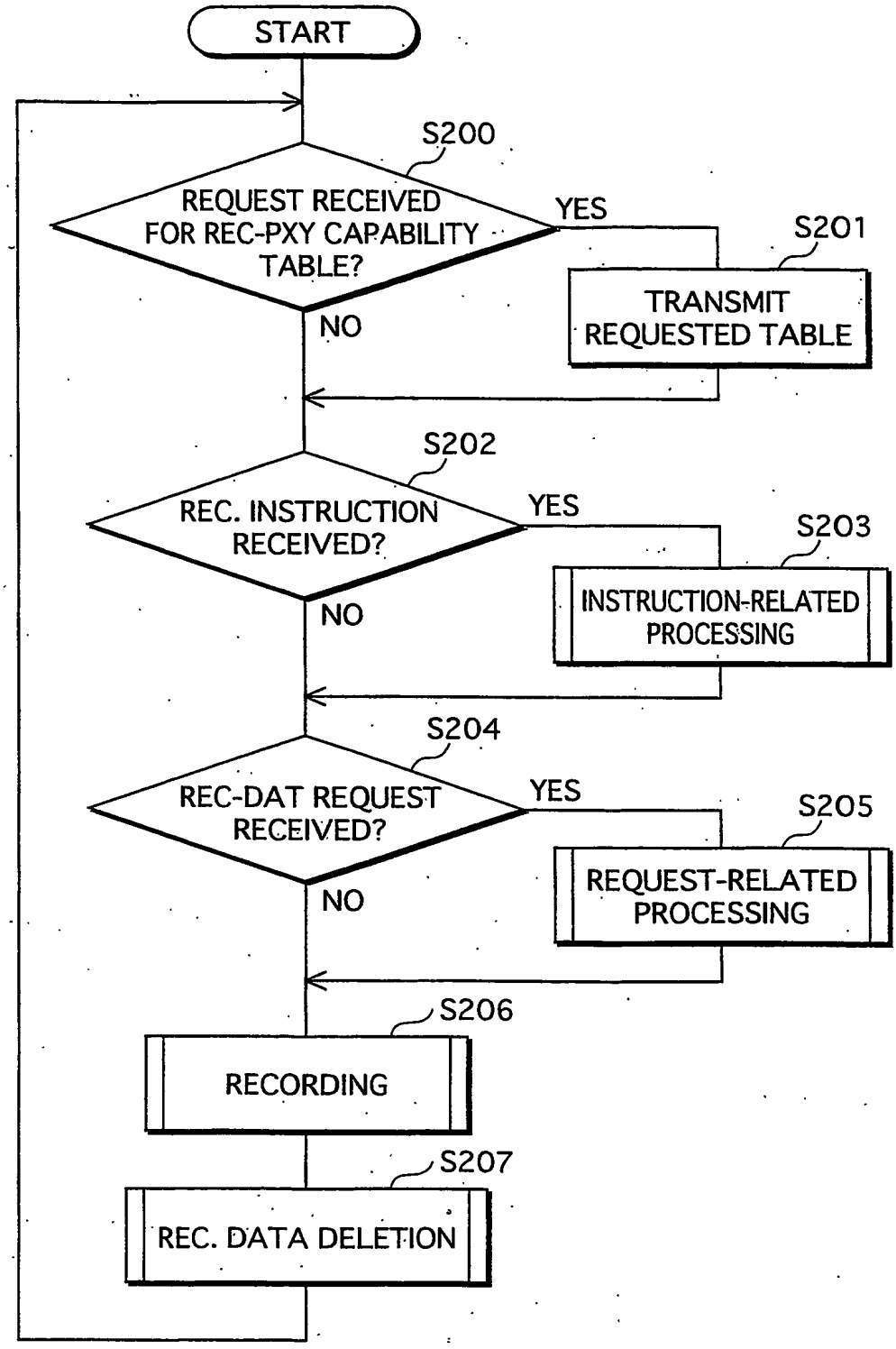

START
S200
REQUEST RECEIVED FOR REC-PXY CAPABILITY TABLE?
YES
S201
TRANSMIT REQUESTED TABLE
NO
S202
REC. INSTRUCTION RECEIVED?
YES
S203
INSTRUCTION-RELATED PROCESSING
NO
S204
REC-DAT REQUEST RECEIVED?
YES
S205
REQUEST-RELATED PROCESSING
NO
S206
RECORDING
S207
REC. DATA DELETION

FIG.24

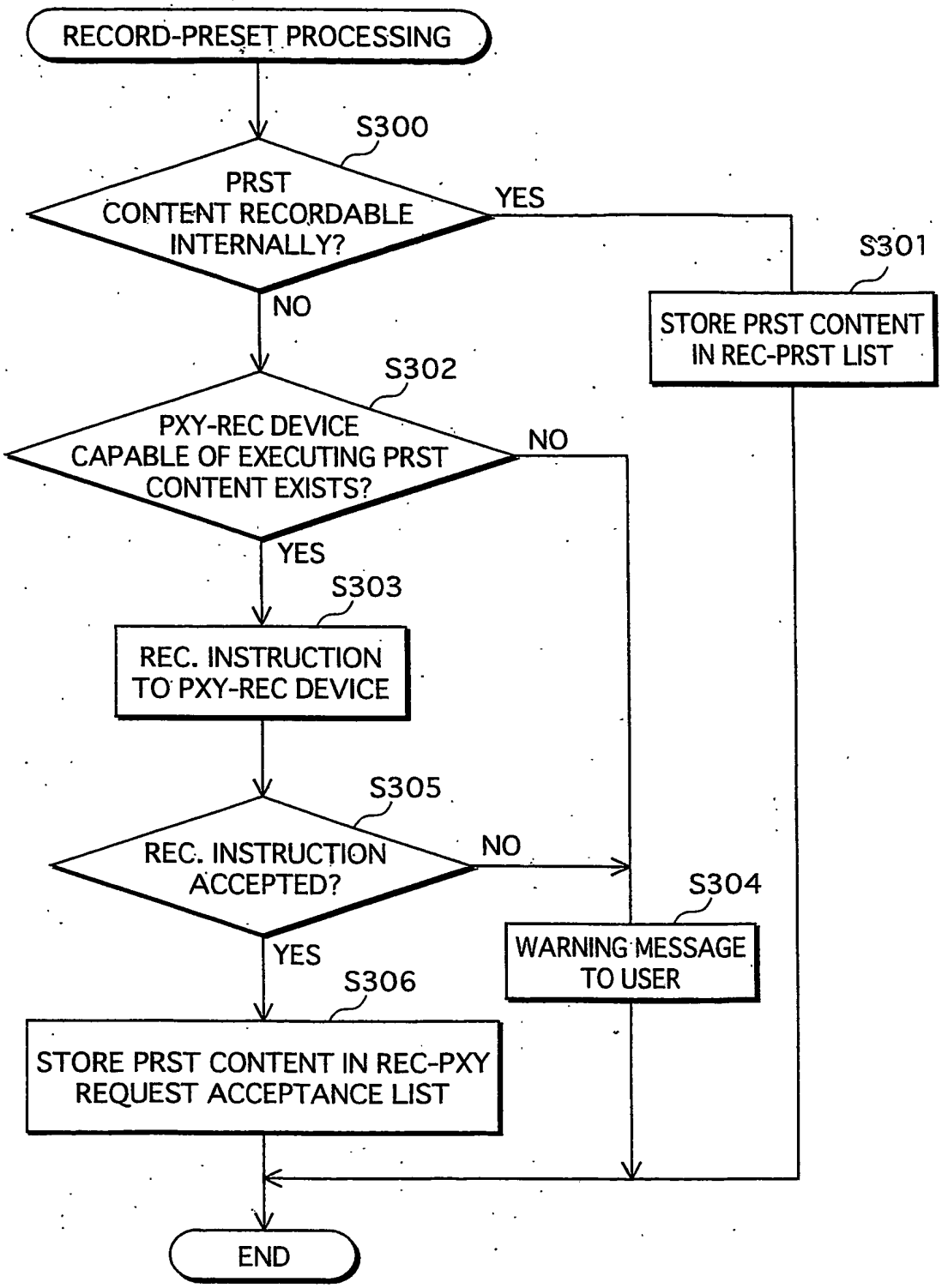

RECORD-PRESET PROCESSING
S300
PRST CONTENT RECORDABLE INTERNALLY?
YES
NO
S301
STORE PRST CONTENT IN REC-PRST LIST
S302
PXY-REC DEVICE CAPABLE OF EXECUTING PRST CONTENT EXISTS?
NO
YES
S303
REC. INSTRUCTION TO PXY-REC DEVICE
S305
REC. INSTRUCTION ACCEPTED?
NO
S304
WARNING MESSAGE TO USER
YES
S306
STORE PRST CONTENT IN REC-PXY REQUEST ACCEPTANCE LIST
END

FIG.25

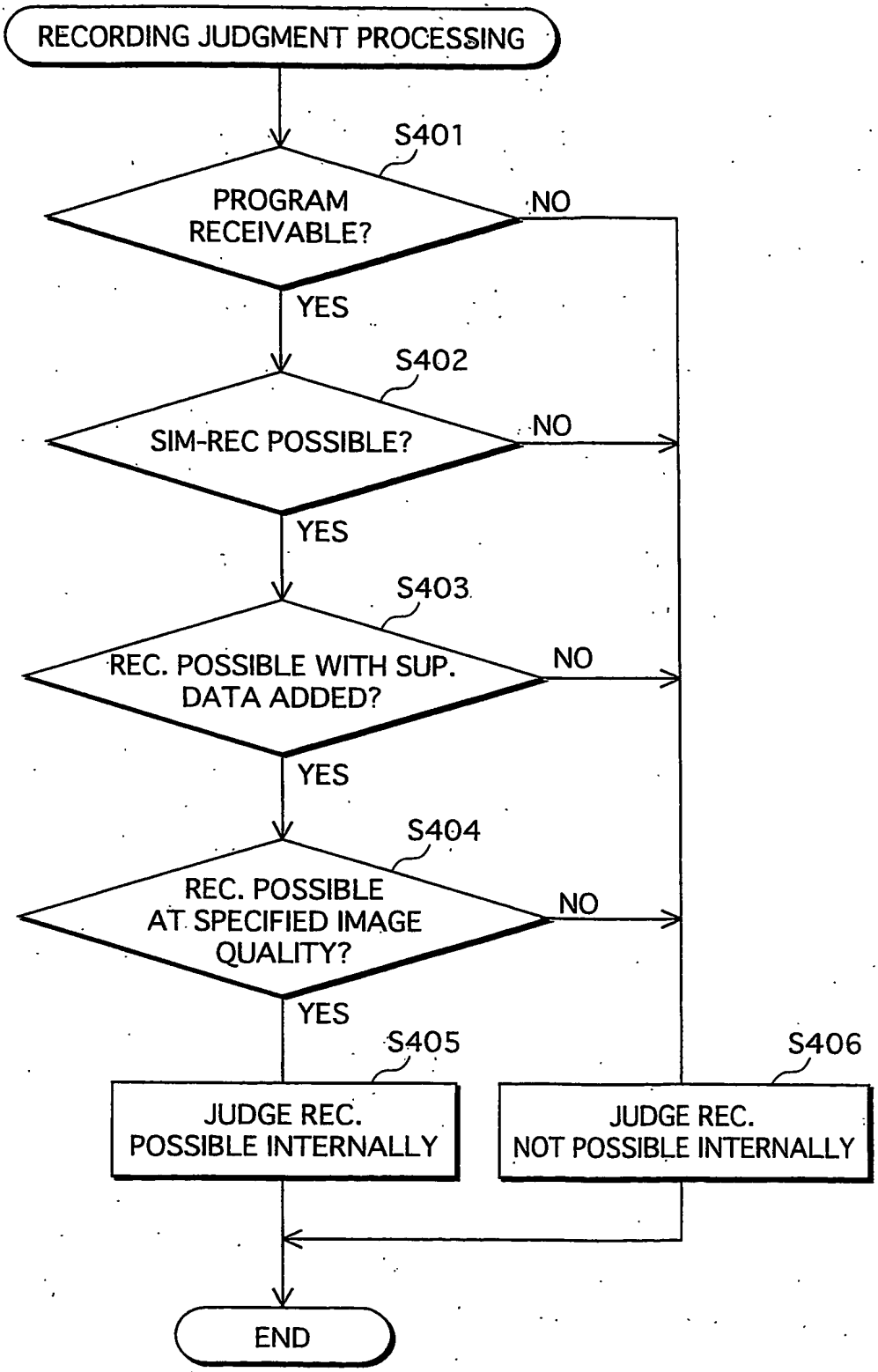

RECORDING JUDGMENT PROCESSING
S401
PROGRAM RECEIVABLE?
NO
YES
S402
SIM-REC POSSIBLE?
NO
YES
S403
REC. POSSIBLE WITH SUP. DATA ADDED?
NO
YES
S404
REC. POSSIBLE AT SPECIFIED IMAGE QUALITY?
NO
YES
S405
JUDGE REC. POSSIBLE INTERNALLY
S406
JUDGE REC. NOT POSSIBLE INTERNALLY
END

FIG.26

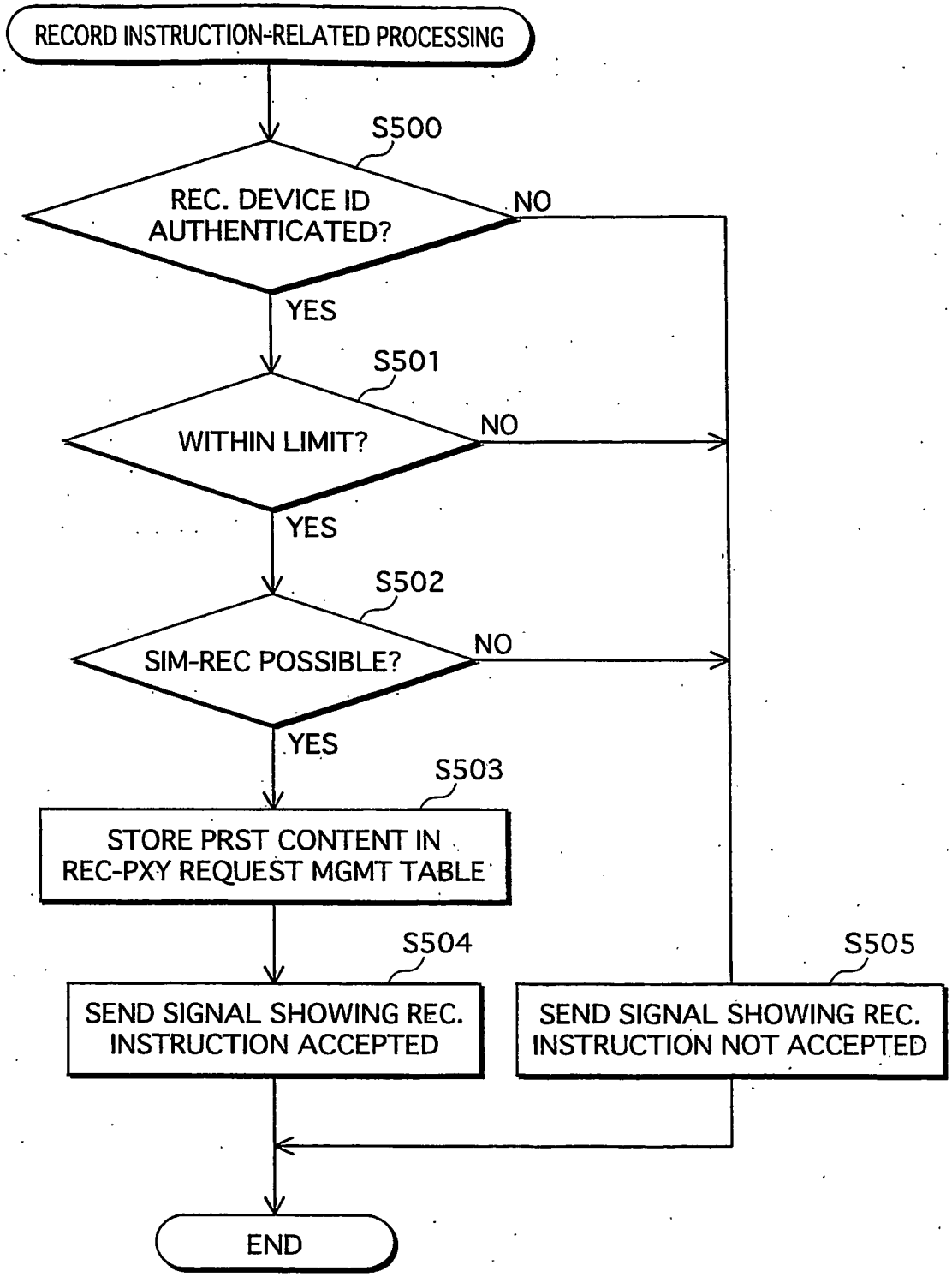

RECORD INSTRUCTION-RELATED PROCESSING
S500
REC. DEVICE ID AUTHENTICATED?
NO
YES
S501
WITHIN LIMIT?
NO
YES
S502
SIM-REC POSSIBLE?
NO
YES
S503
STORE PRST CONTENT IN REC-PXY REQUEST MGMT TABLE
S504
SEND SIGNAL SHOWING REC. INSTRUCTION ACCEPTED
S505
SEND SIGNAL SHOWING REC. INSTRUCTION NOT ACCEPTED
END

FIG.27

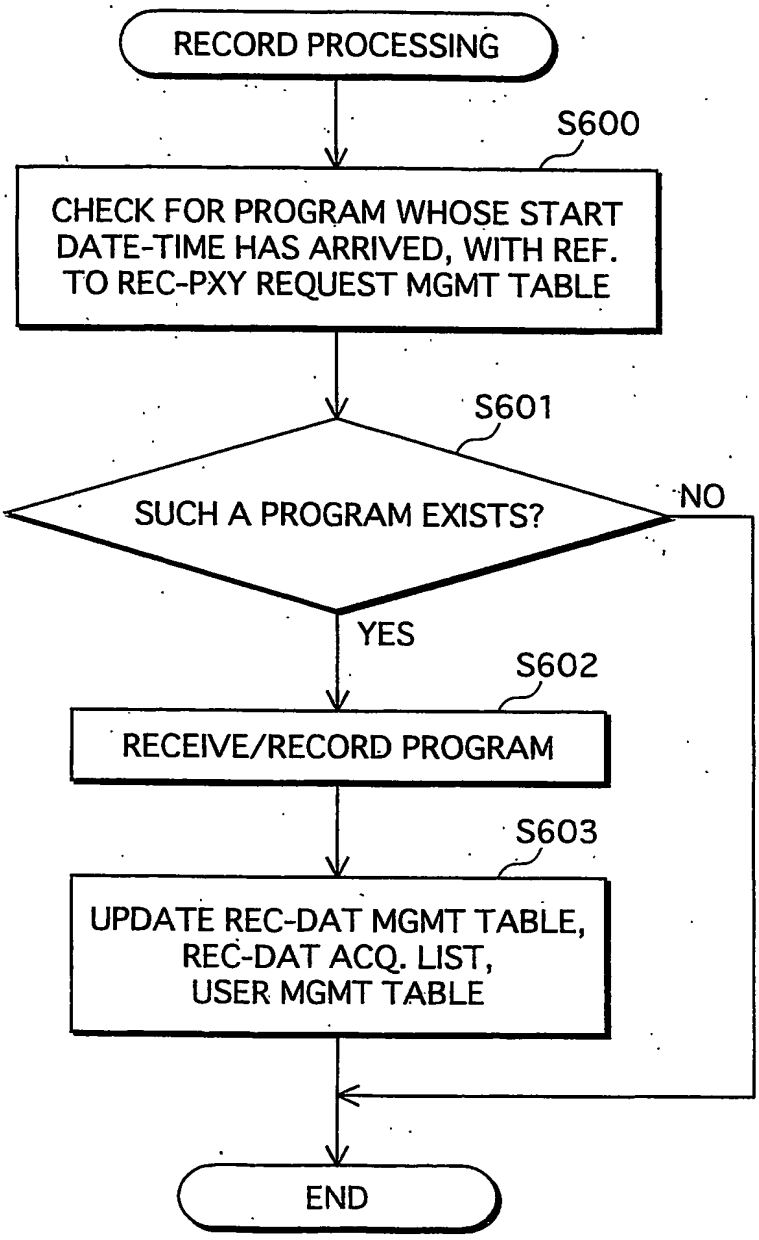

RECORD PROCESSING
S600
CHECK FOR PROGRAM WHOSE START DATE-TIME HAS ARRIVED, WITH REF. TO REC-PXY REQUEST MGMT TABLE
S601
SUCH A PROGRAM EXISTS?
NO
YES
S602
RECEIVE/RECORD PROGRAM
S603
UPDATE REC-DAT MGMT TABLE, REC-DAT ACQ. LIST, USER MGMT TABLE
END

FIG.28

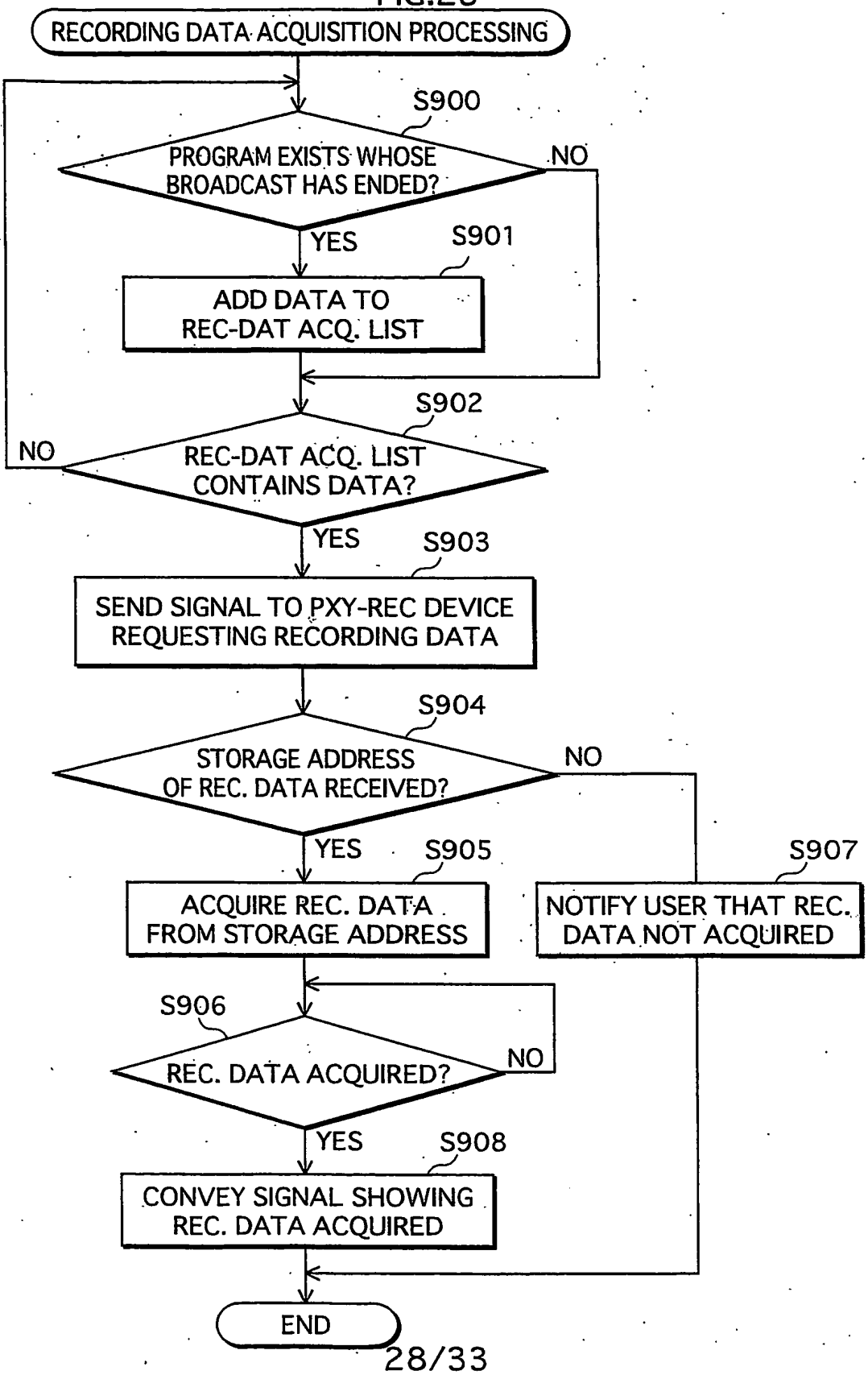

RECORDING DATA ACQUISITION PROCESSING
S900
PROGRAM EXISTS WHOSE BROADCAST HAS ENDED?
NO
YES
S901
ADD DATA TO REC-DAT ACQ. LIST
S902
NO
REC-DAT ACQ. LIST CONTAINS DATA?
YES
S903
SEND SIGNAL TO PXY-REC DEVICE REQUESTING RECORDING DATA
S904
STORAGE ADDRESS OF REC. DATA RECEIVED?
NO
YES
S905
ACQUIRE REC. DATA FROM STORAGE ADDRESS
S907
NOTIFY USER THAT REC. DATA NOT ACQUIRED
S906
REC. DATA ACQUIRED?
NO
YES
S908
CONVEY SIGNAL SHOWING REC. DATA ACQUIRED
END

FIG.29

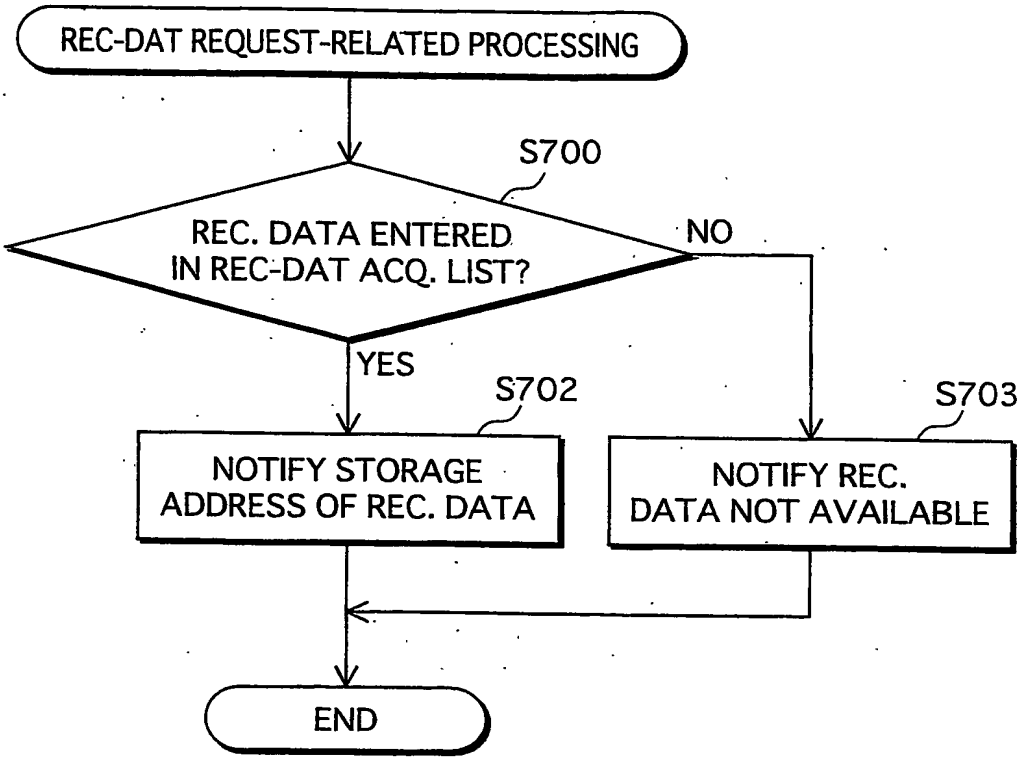

REC-DAT REQUEST-RELATED PROCESSING
S700
REC. DATA ENTERED IN REC-DAT ACQ. LIST?
NO
YES
S702
NOTIFY STORAGE ADDRESS OF REC. DATA
S703
NOTIFY REC. DATA NOT AVAILABLE
END

FIG.30

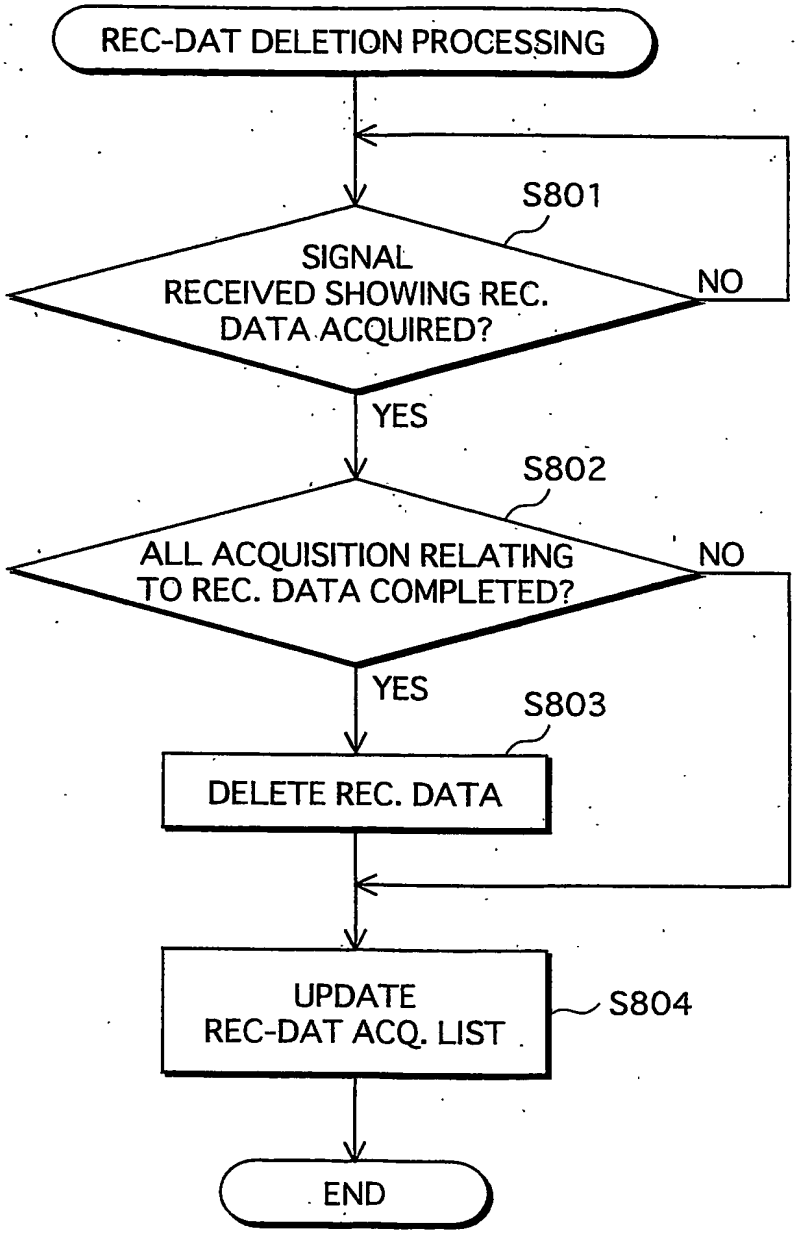

REC-DAT DELETION PROCESSING
S801
SIGNAL RECEIVED SHOWING REC. DATA ACQUIRED?
NO
YES
S802
ALL ACQUISITION RELATING TO REC. DATA COMPLETED?
NO
YES
S803
DELETE REC. DATA
UPDATE REC-DAT ACQ. LIST
S804
END

FIG.31

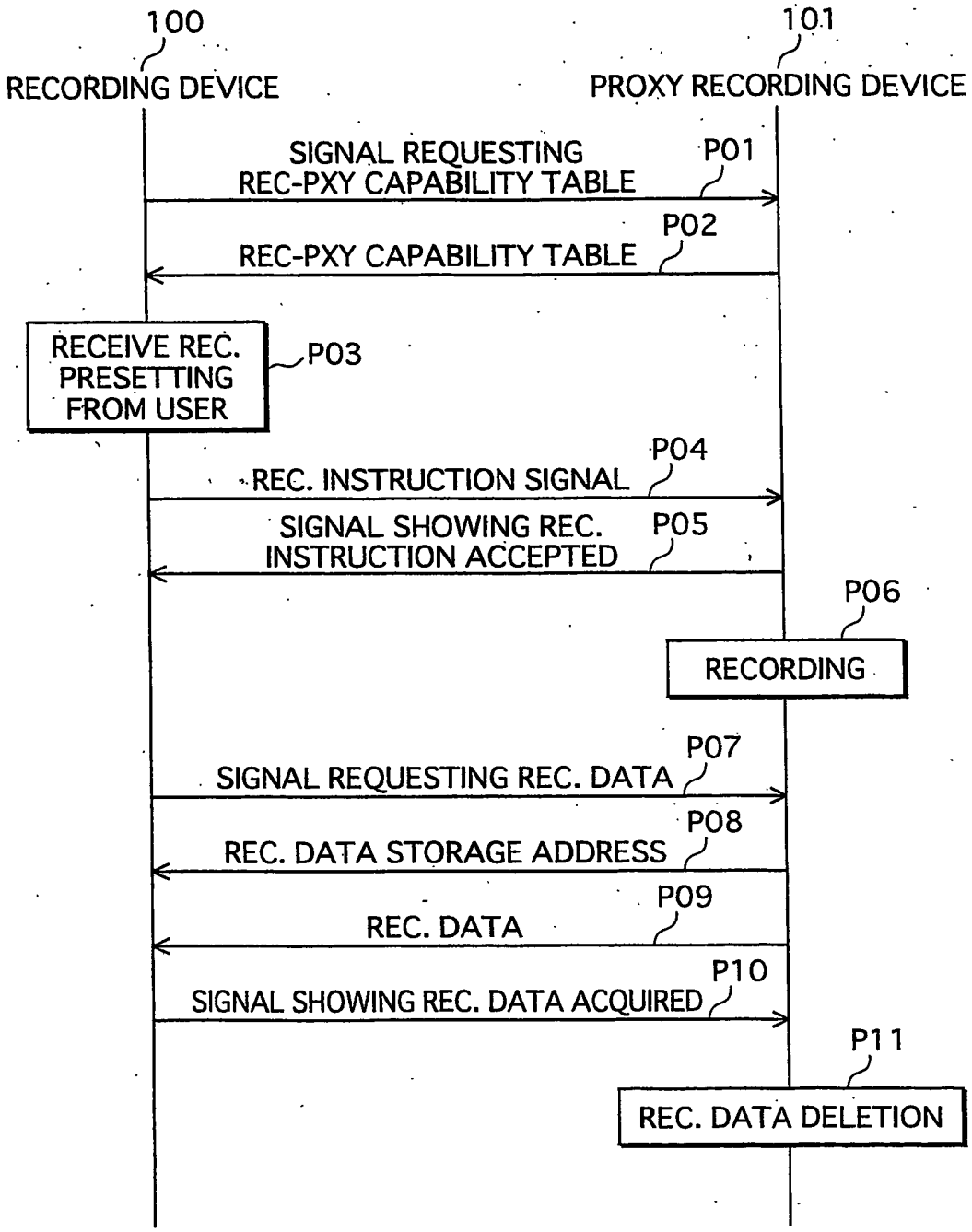

100
RECORDING DEVICE
101
PROXY RECORDING DEVICE
SIGNAL REQUESTING REC-PXY CAPABILITY TABLE
P01
P02
REC-PXY CAPABILITY TABLE
RECEIVE REC. PRESETTING FROM USER
P03
P04
REC. INSTRUCTION SIGNAL
SIGNAL SHOWING REC. INSTRUCTION ACCEPTED
P05
P06
RECORDING
P07
SIGNAL REQUESTING REC. DATA
P08
REC. DATA STORAGE ADDRESS
P09
REC. DATA
P10
SIGNAL SHOWING REC. DATA ACQUIRED
P11
REC. DATA DELETION

FIG.32

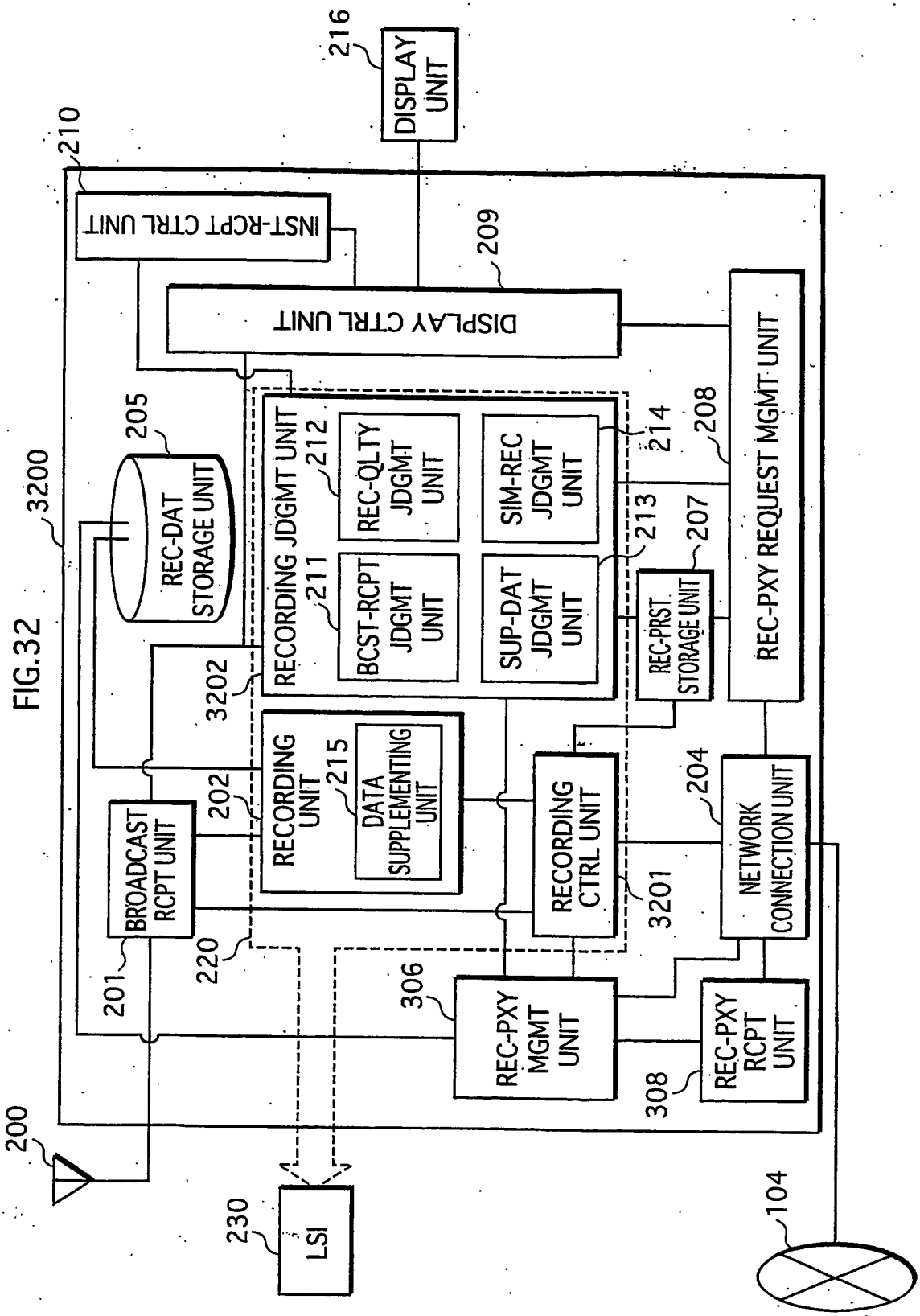
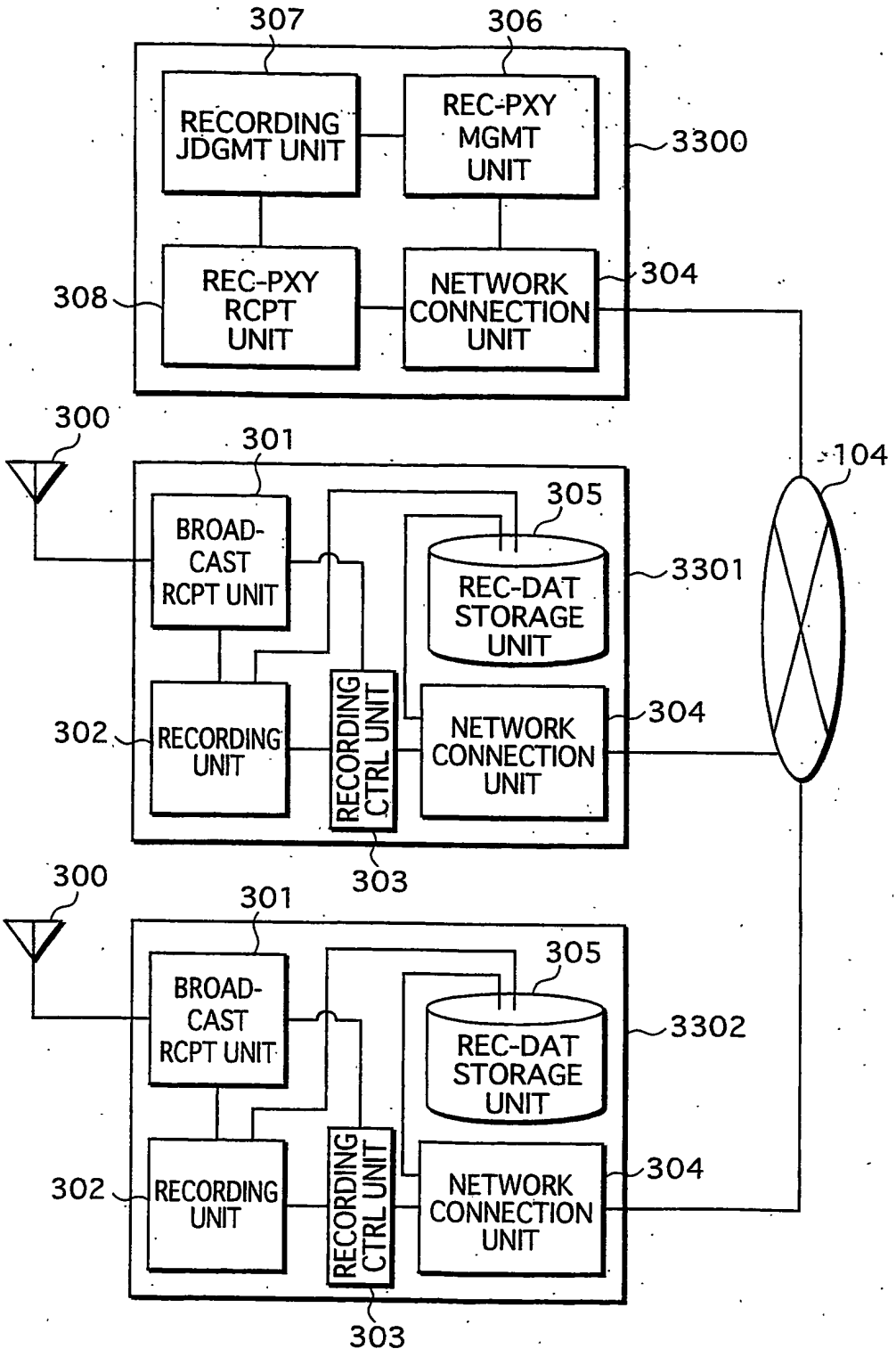

216
DISPLAY UNIT
210
INST-RCPT CTRL UNIT
209
DISPLAY CTRL UNIT
3200
205
REC-DAT STORAGE UNIT
RECORDING JDGMT UNIT
211
212
REC-QLTY JDGMT UNIT
SIM-REC JDGMT UNIT
214
208
BCST-RCPT JDGMT UNIT
SUP-DAT JDGMT UNIT
213
207
REC-PRST STORAGE UNIT
REC-PXY REQUEST MGMT UNIT
3202
RECORDING UNIT
215
DATA SUPPLEMENTING UNIT
202
204
BROADCAST RCPT UNIT
RECORDING CTRL UNIT
NETWORK CONNECTION UNIT
3201
201
220
306
REC-PXY MGMT UNIT
REC-PXY RCPT UNIT
308
200
230
LSI
104

FIG.33


307
306
RECORDING JDGMT UNIT
REC-PXY MGMT UNIT
3300
308
REC-PXY RCPT UNIT
NETWORK CONNECTION UNIT
304
300
301
305
BROAD-CAST RCPT UNIT
REC-DAT STORAGE UNIT
3301
104
302
RECORDING UNIT
RECORDING CTRL UNIT
NETWORK CONNECTION UNIT
304
303
300
301
305
BROAD-CAST RCPT UNIT
REC-DAT STORAGE UNIT
3302
302
RECORDING UNIT
RECORDING CTRL UNIT
NETWORK CONNECTION UNIT
304
303